

A meta-analysis of the greenhouse gas abatement of bioenergy factoring in land-use changes

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Supplementary Material

Figure 1. Mean effect size estimates with 500 bootstrap samples (articles used as blocks) with their 95% confidence intervals.

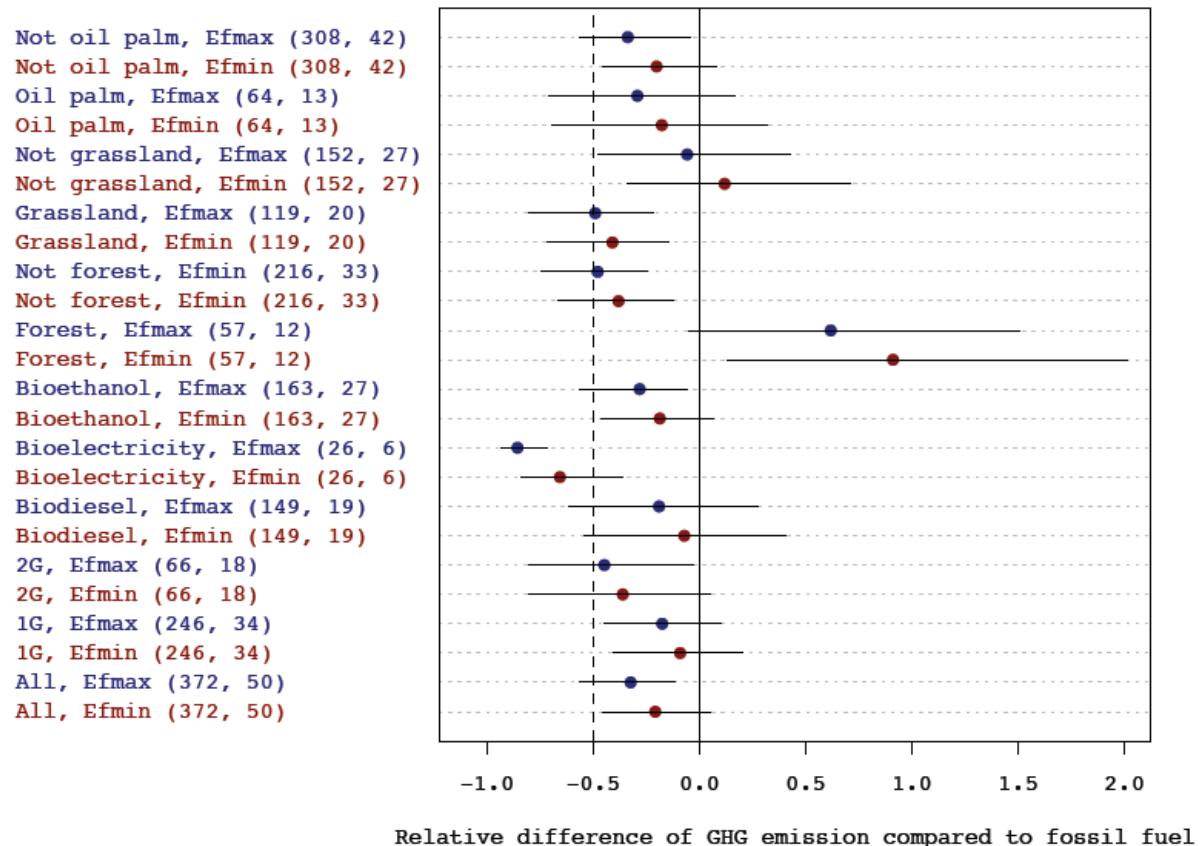


Figure 2. Estimated differences of mean effect sizes between groups of scenarios with 500 bootstrap samples (articles used as blocks) with their 95% confidence intervals

Oil palm vs. not oil palm, Efmax (372, 50)
 Oil palm vs. not oil palm, Efmin (372, 50)
 Grassland vs. not grass. & not forest, Efmax (218, 33)
 Grassland vs. not grass. & not forest, Efmin (218, 33)
 Grassland vs. not grassland, Efmax (271, 35)
 Grassland vs. not grassland, Efmin (271, 35)
 Forest vs. not forest, Efmax (273, 36)
 Forest vs. not forest, Efmin (273, 36)
 Bioethanol vs. not bioethanol, Efmax (372, 50)
 Bioethanol vs. not bioethanol, Efmin (372, 50)
 Bioelectricity vs. not bioelectricity, Efmax (372, 50)
 Bioelectricity vs. not bioelectricity, Efmin (372, 50)
 Biodiesel vs. not biodiesel, Efmax (372, 50)
 Biodiesel vs. not biodiesel, Efmin (372, 50)
 2G vs. 1G, Efmax (312, 42)
 2G vs. 1G, Efmin (312, 42)

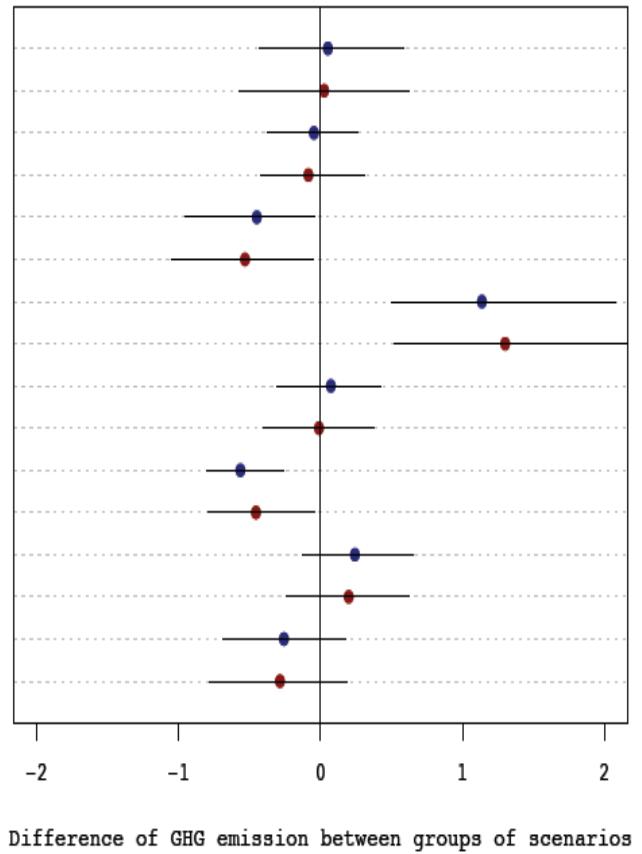


Figure 3. Effect sizes as a function of publication year, using the lower (A) and upper (B) bounds of the fossile GHG emission values (Ef). The blue lines indicate the fitted linear regressions. The p values correspond to a test of the absence of year effect on the effect sizes.

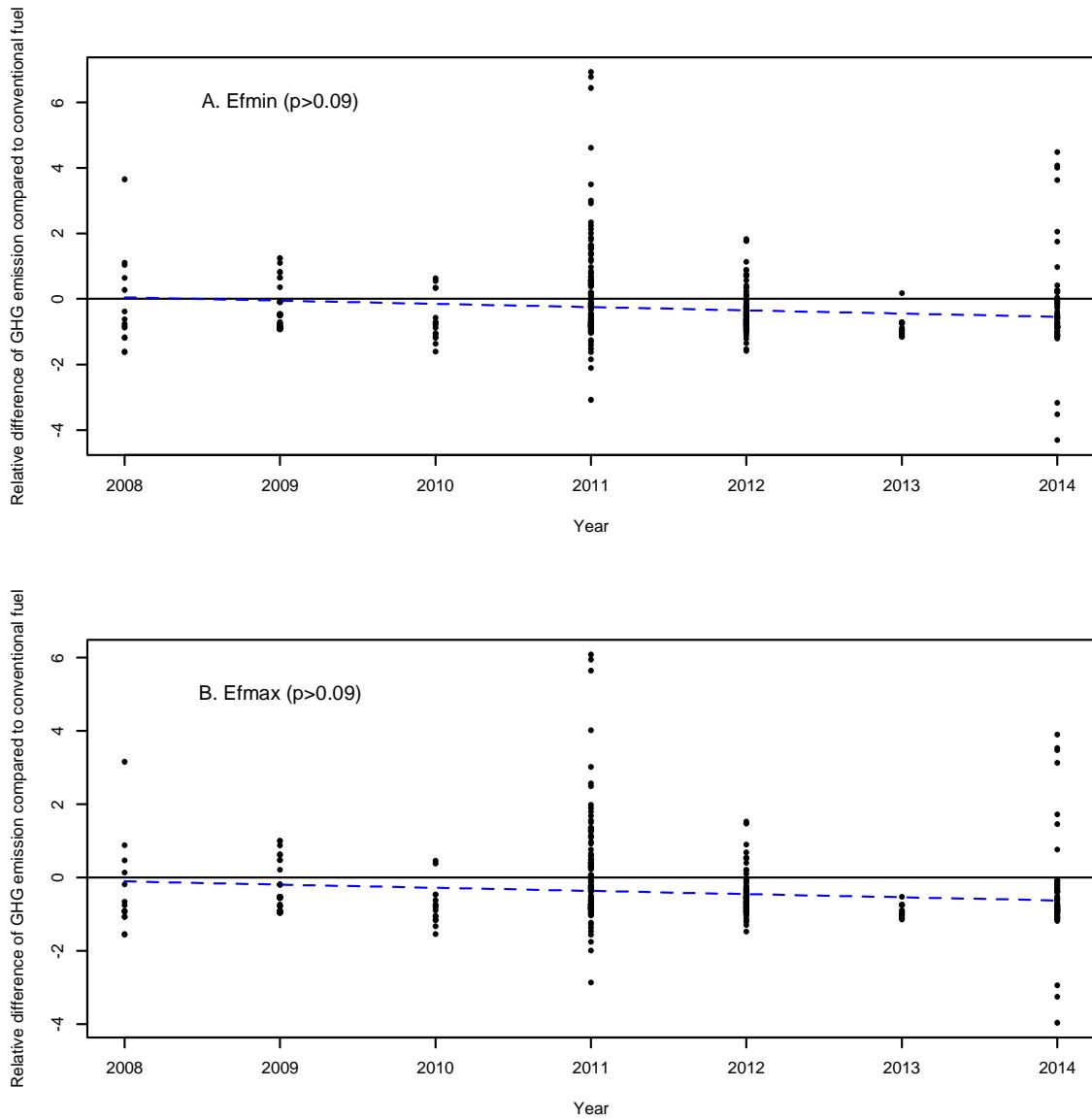


Figure 4. Boxplots of the distribution of the effect sizes as a function of co-product handling method. The figures at the bottom of the graph indicate the number of scenarios involved.

Key to captions : economic, Energy and Mass refer to allocations based on economic value, energy content or mass of the co-products ; S.Expans : System expansion.

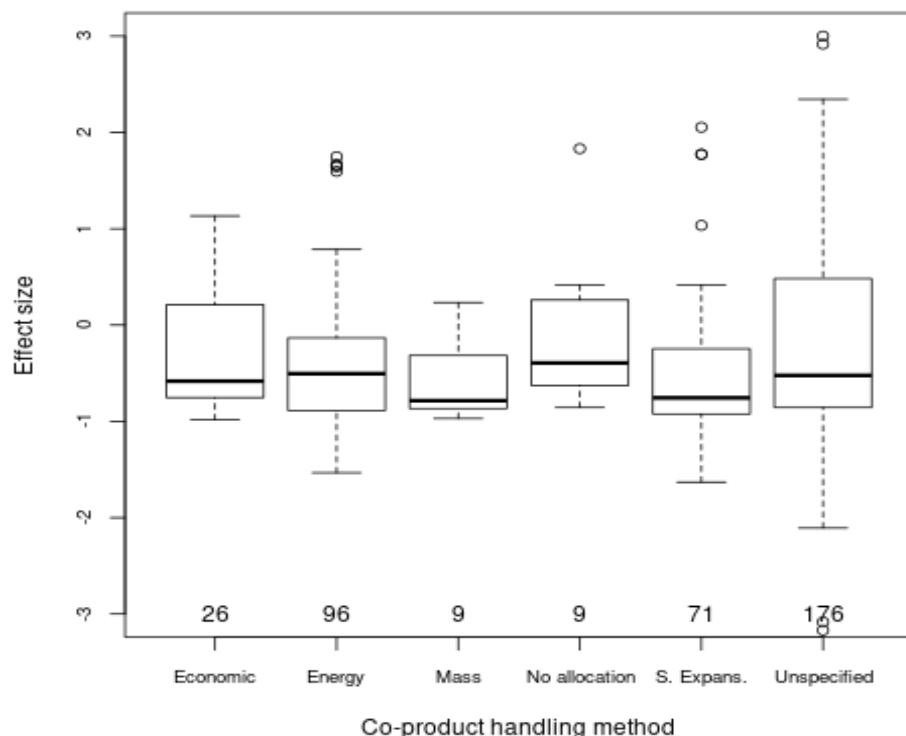


Table 1. Equation for the literature search on the Web of Science.

Number	Search equation
#1	TS=(life AND cycle) OR TS=lifecycle* OR TS=LCA OR TS=LCIA
#2	TS=balance OR TS=Analysis OR TS=impact* OR TS=accounting* OR TS=assessment* OR TS=quality OR TS=performance* OR TS=equity OR TS=externalit* OR TS=sustainability OR TS=valuation OR TS=evaluation
#3	TS=environment* AND #2
#4	#2 AND #1
#5	#3 OR #4
#6	TS=("greenhouse gas*" OR ghg OR biofuel*)
#7	#6 AND #2
#8	#7 OR #5
#9	TS="landuse change*" OR TS="land use change*" OR TS="landuse allocation*" OR TS="land use allocation*" OR TS="landuse dynamic*" OR TS="land use dynamic*" OR TS="land use option*" OR TS="landuse option*" OR TS="land use transition*" OR TS="landuse transition*" OR TS="land use conversion*" OR TS="landuse conversion*" OR TS="land use competition*" OR TS="landuse competition*" OR TS="land use take*" OR TS="landuse take*" OR TS="land use conversion*" OR TS="landuse conversion*" OR TS="land use scenari*" OR TS="Landuse scenari*" OR TS="land use strateg*" OR TS="Landuse strateg*" OR TS="land use impact*" OR TS="Landuse impact*" OR TS="land use competition*" OR TS="Landuse competition*" OR TS="land use expansion*" OR TS="Landuse expansion*" OR TS="land grabbing" OR TS="land sparring" OR TS="Land sharing" OR TS="agricultural expansion*" OR TS="Marginal land*" OR TS="land abandonment"
#10	#8 AND #9

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Data base

The data base used in the metaanalysis is available as a spreadsheet file.